



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/872,628	06/01/2001	Thomas A. Isenburg	884.444US1	1711

7590

12/09/2002

Schwegman, Lundberg, Woessner & Kluth, P.A.
P.O. Box 2938
Minneapolis, MN 55402

EXAMINER

DATSKOVSKIY, MICHAEL V

ART UNIT

PAPER NUMBER

2835

DATE MAILED: 12/09/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/872,628

Applicant(s)

ISENBURG, THOMAS A.

Examiner

Michael Datskovsky

Art Unit

2835

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 25 November 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 9, 11 and 17 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Regarding to the claim 9: Although the specification comprises specific advises on the topic, how to achieve a predetermined amount of pressure imparted to the processor by using known torque driver tools, it does not show or explain any torque driver provided as a specific structural element of the proposed invention. Regarding to the claims 11 and 17: A threaded connection of the heat sink to the mounting plate or a mounting plate attached to a circuit board by a plurality of locking pins having slidable bosses do not allow to consider such types of connections as "permanently mounted". Applicant has not provided any structural elements (for example: connection by welding, glue, soldering e.g.) to support such a statement. The statements that: "...the thermal solution is permanently mounted to the mounting plate opening" in the claim 11, and: "...the apparatus permanently attaches the thermal solution to the circuit board" in the claim 17 have not been given patentable weight because they are narrative in form. In order to be given patentable weight a functional recitation must be expressed as a "means" for performing the special

Art Unit: 2835

function, as set forth in 35 USC §112, 6th paragraph, and must be supported by recitation in the claim of sufficient structure to warrant the presence of the functional language. In re Fuller, 1929 C.D. 172; 388 O.G. 279.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by McCullough et al.

McCullough et al teach an apparatus 100, Figs.2-8, for attaching a thermal solution (heat sink 120) to a circuit board 112, comprising: a mounting plate 146 having a mounting plate opening 142 designed to allow the thermal solution 120 to contact a processor 118, the socketed processor 118 secured on the circuit board 112; and a connector 126 having a first end 128 and a second end 130, the first end 128 attachable to the mounting plate 146 and the second end 130 securable to the circuit board 112, the connector designed to keep the mounting plate 146 in contact with the processor 118. McCullough et al teach furthermore said mounting plate 146 being made from plastic (col.7, lines 12-19).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2-33 (claims 9, 11 and 17 as best understood by examiner) are rejected under 35 U.S.C. 103(a) as being unpatentable over McCullough et al in view of Kehley et al.

McCullough et al teach all the limitations of the claims except a backing plate on the other side of the circuit board, said backing plate being connected to the mounting plate by a connector (four locking pins) secured at their second end to the backing plate, slid through the existing opening in the circuit board and secured at their first end to the keyhole slots in the mounting plate; certain design of said keyhole slots, material for some parts and certain ranges of the pressure imparted to the processor and of the thickness of the circuit board. Kehley et al teach an apparatus, figs.1-10, for attaching a passive thermal solution to a circuit board and to a package, comprising: a mounting plate 90 having a mounting plate opening 98 designed to allow the passive thermal solution (heat sink 70) to contact a processor 60 located in a socketed package secured to a circuit board 30; a backing plate 20 connected with the mounting plate 90 with a plurality of connectors (locking pins 241, 242), said connectors each having a first end secured to the slot 94 in the mounting plate 90, and the second end secured to the backing plate 20, wherein said backing plate 20 is designed to prevent flexure of the

circuit board 30, and said connectors slide through the holes 34 in the circuit board are designed to keep the mounting plate 90 in contact with the processor 60. Kehley et al teach furthermore: said mounting plate 90 comprises four keyhole shaped slots 94 and four corresponding locking pins 241, 242 insertable therein, each slot 94 having an angled shelf 947, fig.5, along which a boss 225 of the locking pin 242 can slide, whereby creating a predetermined amount of pressure imparted to the processor 60, wherein pressure on the processor increases as the locking pins slide along the shelves in a downwardly direction. Kehley et al also teach that said processor can be attached permanently or temporary for testing purposes or further reusing (col.1, lines 48-57; and col.3, lines 24-48). Both representing a generally similar type of so called "non-destructive" socketed mounts of processors and heat sinks, device by McCullough et al is designed to provide a heat sink assembly with multiple (predetermined) pressure capability, which was one of the goals of the applicant's invention, and device by Kehley et al is provided with a backing plate and a plurality of easily connected / disconnected locking pins, employed to achieve two other goals of applicant's invention: to prevent flexure of the circuit board and to facilitate mounting/dismounting of the heat sink for testing. It would have been obvious to one skilled in the art at the time invention was made to employ a backing plate and a plurality of easily connected / disconnected locking pins in the device by McCullough et al as it is shown by Kehley et al in order to prevent flexure of the circuit board and to facilitate mounting/dismounting of the heat sink during testing (or only a plurality of easily connected / disconnected locking pins in the device by McCullough et al as it is shown by Kehley et al in order to facilitate

Art Unit: 2835

mounting/dismounting of the heat sink during testing as it is claimed in claims 25-28).

Regarding to the claims 10, 13 and 15-16: McCullough et al and Kehley et al teach all the limitations of the claims except: about 345 to 690 kPa of pressure can be imparted to the processor after the heat sink has been screwed into the mounting plate (claim 10) or after the locking pins have been slid along the shelves (claim 13); and when the circuit board is less than 1.5 mm in thickness 30 watts of power is removable near a temperature of about 100°C (claim 15), or when the circuit board is greater than 1.5 mm in thickness 50 or more watts of power is removable near a temperature of about 100°C (claim 16), therefore said imparted pressure and said thickness of the circuit board are result effective variables, and the determination of optimum or workable ranges of said variables might be characterized as routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977), and involves only routine skills in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955). Affidavits or declarations containing evidence of criticality or unexpected results, commercial success, long - felt but unsolved needs, failure of others, skepticism of experts, etc., must be considered by the examiner in determining the issue of obviousness of claims for patentability under 35 U.S.C. 103. To establish unexpected results over a claimed range, applicants should compare a sufficient number of tests both inside and outside the claimed range to show the criticality of the claimed range. In re Hill, 128 USPQ 197 (CCPA 1960). Regarding to the claim 18: McCullough et al and

Art Unit: 2835

Kehley et al teach all the limitations of the claim, including said mounting plate 146 being made from plastic (col.7, lines 12-19), except said backing plate and connector(s) being made from a material selected from the group consisting of aluminum, steel and plastic. It would have been obvious to one having ordinary skill in the art at the time the invention was made to *make these parts* from a group consisting of aluminum, steel and plastic, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. Regarding to the claims 25-33: The method steps are obviously necessitated by the device structure as McCullough et al and Kehley et al show it.

7. Claim 18 is also rejected under 35 U.S.C. 103(a) as being unpatentable over McCullough et al and Kehley et al in view of Loo (EP 0637 079 A1) or Mira (US Patent 5,662,163). Both Loo and Mira teach an electronic package comprising a heat sink on one side of a circuit board and backing plate on the other side of the circuit board, and attaching connectors (pins or posts), wherein said backing plate and said connectors are made from steel. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make these parts from steel in the device by McCullough et al and Kehley et al as it is shown by Loo or Mira in order to use a material appropriate for a stamping – a manufacturing process mostly used to produce such type of fastening parts.

Art Unit: 2835

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Datskovsky whose telephone number is (703) 306-4535. The examiner can normally be reached on Mn - Fry 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren E. Schuberg can be reached on (703) 308-4815. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Patent examiner

Michael Datskovsky

A handwritten signature in black ink, appearing to read "Michael Datskovsky", written in a cursive style.

December 5, 2002